

## A new *Cercestis* species (*Araceae*) from the Ivory Coast

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**Summary** : A new species of *Cercestis* (*Araceae*), *C. taiensis* Bogner & Knecht, described here, differs from all other species of this genus by entire, ovate leaf-blades with a cuneate to cordate base, parallel primary lateral veins, very long, linear secretory canals, and a campylotropous ovule.

**Résumé** : Description d'une nouvelle espèce du genre *Cercestis* Schott (*Araceae*), *C. taiensis* Bogner & Knecht. Elle diffère des autres espèces du genre par les feuilles dont le limbe est entier, ové, rétréci ou cordé à la base, avec des nervures primaires latérales parallèles et des canaux sécréteurs linéaires très longs, et par un ovule campylotrope.

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*Cercestis taiensis* Bogner & Knecht has been known for over 30 years, but was never found in flower in nature, although one of the authors (M. K.) visited the locality near Tai at different times over a period of six years ; this locality was first discovered by Christian de NAMUR. Living plants were also cultivated in a greenhouse in the Ivory Coast and in several botanical gardens in Europe. One plant flowered 1984 in the Botanischer Garten München, after treatment with gibberellin. The other known collections by AKÉ ASSI (n<sup>os</sup> 5728 and 12853) are all sterile and this raises the question, do the plants flower in nature ? The cultivated plants in München have never flowered again.

***Cercestis taiensis* Bogner & Knecht, sp. nov.**

*Ab omnibus speciebus generis Cercestis Schott adhuc cognitis differt foliorum laminis integerrimis basi cuneatis vel cordatis, nervis primariis lateralibus parallelis, canalibus secretoriis linearibus longissimis, ovulis campylotropis.*

**TYPUS** : *Knecht S 11-R 57*, Ivory Coast, near Tai (holo-, M ; iso-, K).

Plants creeping, rarely climbing up to 4 m. Roots stiff, brown, when climbing, young roots reddish. Foliage leaves 4-5 in rosettes ; petiole 4-10 cm long and ca. 2 mm in diameter, dark green, petiolar sheath short, up to 2 cm long ; leaf-blade ovate, always entire, base cuneate to cordate, 10-16 cm long and 4.5-6.5 cm wide, dark green, somewhat glossy, middle vein strong, 5-7 primary lateral veins on each side, parallel, running towards the apex, with numerous long, linear secretory canals between them, lateral veins of second and third order reticulate ;





Fig. 1. — *Cercestis taiensis* Bogner & Knecht : 1, whole plant with flagellum  $\times 0.5$  ; 2, lower part of leaf-blade, right side with long secretory canals  $\times 1.5$  ; 3, spadix  $\times 1$ . All from *Knecht S 11-R 57*. Drawing : E. J. GNAORE.





Fig. 2. — *Cercestis taiensis* Bogner & Knecht : 1, flowering specimen in cultivation in Botanischer Garten München, *Knecht S 11-R 57* ; 2, inflorescence, spathe opened to show the spadix, *Knecht S 11-R 57* ; 3, part of terrestrial population near Tai ; 4, the rare climbing habit, photograph taken near Tai. (1, 2, photos J. BOGNER ; 3, 4, photos M. KNECHT).

secretory canals of different length, mostly from 1-4 cm, shortest ca. 0.3 cm long, longest up to 6 cm long. Cataphylls membranous, persistent, 3-6 cm long, green, soon drying and becoming brown. Young leaves slightly reddish. Flagella developing after 4-5 leaves, 20-100 cm long and ca. 2 mm in diameter, green ; internodes 4-20 cm long, with a cataphyll at each node, these persistent, 1.8-2.0 cm long, green, drying soon and becoming brown ; flagella with a few short roots, 1-10 mm long. Peduncle 3.0-3.5 cm long and ca. 0.5 cm in diameter, thickened towards apex, dark green. Spathe ca. 5 cm long, thick, slightly constricted, outside dark green below and lighter green above, inside purplish basally and yellowish green above. Spadix ca.



5.5 cm long ; female part ca. 1 cm long and ca. 0.8 cm in diameter, male part ca. 4.5 cm long and ca. 0.6 cm in diameter below, becoming thinner towards the apex, acute, cream. Flowers unisexual, naked. Pistils ca. 3 mm long ; ovary depressed globular, sometimes squeezed, light green, ca. 2 mm in diameter, unilocular, with one ovule ; ovule campylotropous, ca. 1 mm long ; placentation sub-basal ; style very short to subsessile (ca. 0.2 mm) ; stigma subcapitate, ca. 2 mm in diameter, whitish, papillose. Stamens prismatic, more or less irregularly formed, in view from above angular, sometimes rectangular, occasionally polygonal, 1.5-2 mm long and 1.1-1.8 mm wide ; thecae lateral, opening apically ; pollen grains inaperturate, ellipsoid,  $25-30 \times 20-25 \mu\text{m}$ , exine smooth. Chromosome number :  $2n = 42$ .

## DISTRIBUTION

The three known localities form a triangle of about 180 km per side. The species is very localised, occurring in large populations in the southwest of Ivory Coast. This part of the country has many endemic species.

**MATERIAL STUDIED :** IVORY COAST : *Aké Assi 5728*, from Pata-Idié, cultivated at the Botanical Garden of Adiopodoumé, 23.VIII.1960 (UCJ) ; *Aké Assi 12853*, Mont Niénokoué, Parc National de Tai, 15.III.1975 (UCJ) ; *Knecht 1141*, Polé-Oula, near Tai, forêt primaire, 19.XI.1980 (UCJ). — All these herbarium specimens are sterile. The only fertile specimens, *Knecht S 11-R 57* (M, K), were originally collected near Tai, and flowered later at the Botanischer Garten München in 1984.

## ECOLOGY

Dense populations of *Cercestis taiensis* occur near Tai, where there are more than one hundred thousand plants in an area of about 1/2 ha on shady places in tropical rain forest. The soil is a sandy loam and moderately coarse textured ; pH 4.3. Nearly all plants were creeping and linked together by flagella ; only three or four climbing plants have been seen, reaching a height of 3-4 m (Fig. 2, 4). As has been mentioned earlier (KNECHT, 1983), these plants are not very good climbers and tend to fall down when the weight of the leaves gets too heavy (more than four leaves).

*Cercestis congensis* Engl. and *C. sagittatus* Engl., may also form dense terrestrial populations, but these two species form also many climbing plants. The terrestrial growth pattern, with the formation of rosulate plants and flagella, is also retained in the climbing phase in *Cercestis stigmaticus* N. E. Br. and *C. ivorensis* A. Chev. Other species, for instance *C. afzelii* Schott, have a continuous climbing growth ; they also produce flagella, but the foliage leaves are on shoots with elongate internodes and not in rosettes. As *Cercestis taiensis* has never been seen in flower at its natural habitat, the population could developed from a single plant.



## DISCUSSION

*Cercestis taiensis* is characterized by its parallel primary lateral veins, differing from all other species of the genus where the venation is completely reticulate. *C. taiensis* has somewhat tough leaf-blades and on fresh leaves the venation type seems to be completely parallel, especially since second and third order veins are inconspicuous. This appearance is further enhanced by the conspicuous long, linear secretory canals running between the primary lateral veins, especially visible on the underside of the leaf-blade. In dried material it becomes apparent that there are reticulate secondary and tertiary lateral veins between the primaries. These are much thinner and form a stretched network. The linear secretory canals can be easily distinguished from the veins by their transparent appearance when the leaf is viewed against the light. This venation type is unique to *C. taiensis* and, with the exception of the secretory canals, resembles the venation found in members of the tribe *Monstereae*, in particular the genus *Rhaphidophora* Hassk. Secretory canals or glands (dots) are found in other species, the linear type, although shorter than in *C. taiensis*, for instance in *C. ivorensis* or the punctiform type as in *C. camerunensis* (Ntépé) Bogner. They are absent in other species, i.e. *C. stigmaticus*, *C. sagittatus*.

The ovate leaf-blades with cordate base in *Cercestis taiensis* are found otherwise only in the juvenile stage of *C. camerunensis*, a species with dots and producing lacinate leaf-blades in the adult stage. *C. taiensis* always has entire leaf-blades throughout its life cycle.

Regarding ovule type, all other *Cercestis* species have anatropous to hemianatropous (micropyle directed sideways and not downwards) ovules, but *C. taiensis* differs in having a campylotropous ovule.

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## LITERATURE

- ENGLER, A., 1911. — *Araceae-Lasioideae* in A. ENGLER, *Das Pflanzenreich* IV. 23 C (Heft 48) : 1-130, 44 fig. (*Cercestis* incl. *Rhektophyllum*) : 114-121. Wilhelm Engelmann, Leipzig.
- GRAF, A. B., 1992. — *Hortica. Color Cyclopedia of Garden Flora and Indoor Plants*. Roehrs Company, East Rutherford, N. J. (USA). 1218 pages, 8100 photographs (*Cercestis taiensis* : text p. 995, color photograph p. 24).
- KNECHT, M., 1983. — Contribution à l'étude biosystématique des représentants d'Aracées de la Côte d'Ivoire. *Phanerogamarum Monographiae*, tomus 17 : 1-290, 76 fig., 14 tab., 21 pl. J. Cramer, Vaduz.
- NTÉPÉ-NYAMÈ, C., 1988. — Aracées in *Flore du Cameroun* 31 : 1-140, 55 pl. Ministère de l'enseignement supérieur de l'informatique et de la recherche scientifique, Yaoundé, Cameroun.